Building Green

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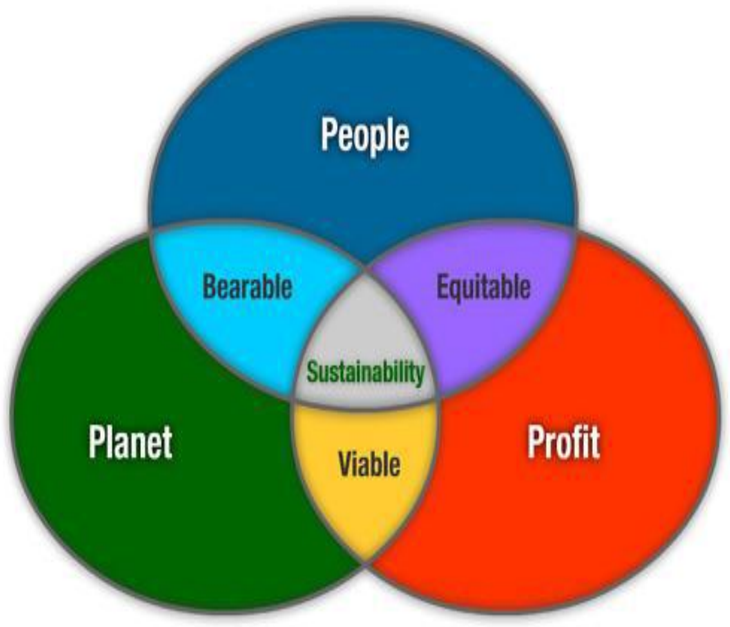
"Sustainability, ensuring the future of life on Earch, is an infinite game, the endless expression of generosity on behalf of all." (Paul Hawken)

Abstract

Sustainability is broadly defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

Since the Industrial revolution, humans have continued to disregard earth's well-being and its finite resources; leading ourselves into extinction. Currently, the organization known as Leaders in Energy and Environmental Design (LEED) is America's foremost recognized sustainable building certification program.

Sustainability is a concept of great concern in current day, and data suggesting our lack of sustainability has already begun wreaking havoc on our planet, our friends and family, and our businesses. LEED is the organization responsible for the positive reinforcement of the greatest contributors of poor sustainability; as nearly all of our energy and resource issues pertain to built urban structures.



Key Questions

1. How do sustainable building methods affect our planet, Earth?
2. How do sustainable building methods affect human beings?
3. How do sustainable building methods affect the profits of businesses?
4. How would one receive recognition for building sustainably?

Sources

Planet:
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People:
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2. http://www.earthtimes.org/encyclopaedia/environmental-issues/environmental-health/
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Profit:
1. U.S. Department of Energy, Building America Program
2. Langdon, Davis. The Cost of Green Revisited. Publication. 2007.
3. Fuerst, Franz; McAllister, Pat. Green Noise or Green Value? Measuring the Effects of Environmental Certification on Office Property Values. 2009.
4. Pivo, Gary; Fisher, Jeffrey D. Investment Returns from Responsible Propert y Investments: Energy Efficient, Transit-oriented and Urban Regeneration Of fice Properties in the US from 1998-2008. 2009.
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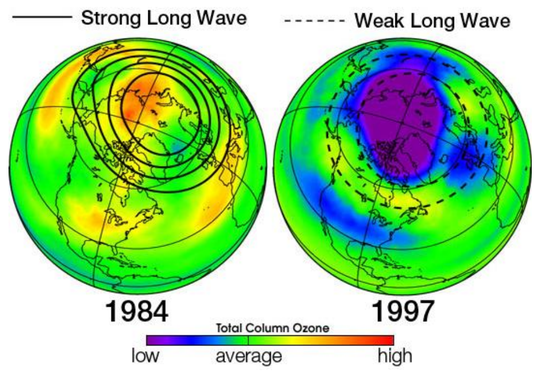
Certification:
1. Leading Green Training Course with Lorne Mlotek

1. Planet

Earth's only protection from ultraviolet radiation is a blanket of O3 along the boundaries of our stratosphere, known as ozone. Refrigerants known as CFCs, HCFCs, and Halons are extremely detrimental to our ozone and since 1992, have halted in production via the Montreal Protocol. However, the Protocol does not regulate emissions from existing banks of CFCs such as existing buildings, refrigerators, air conditioners, and more. Now that production has halted, we as designers, and builders, have been bequeathed the responsibility of improving the health of the ozone through construction of buildings which do not emit any existing refrigerants. Such chemicals, once airborne, are affected by sunlight and quickly break down ozone in the stratosphere. This loss of ozone allows ever more ultraviolet radiation to enter our biosphere. Evidence shows that UV Radiation is capable of altering living organisms at a genetic level and it is clear life would cease to exist without ozone. Overexposure to UV radiation can change the flowering times of some kinds of plants and therefore will affect the animals that depend on them. Impaired photosynthesis, reduction in size, resilience, productivity, and quality of crops has also been studied. Additionally, marine organisms living in shallow water are becoming irradiated. Scientists are recording a reduction of at least 6%-12% in photosynthesis by phytoplankton in surface waters. Reducing populations of phytoplankton would significantly impact the world's carbon cycle, because phytoplankton store huge amounts of carbon in the ocean.



2. People

Since the start of the "green effect", the earth and its resources have changed the way humans live in their environment from recycling household plastics and food containers, up to reusing metals and paper. We are just starting to find new alternatives for changing the way we construct/reconstruct within the public environment. As far as it goes with health risks, we have changed drastically since the spark of new diseases that has started to incline. We have gotten to the point where a *blue haze* shows as an indicator of the atmospheric change due to power plants or fossil-fuel burning. The effect of the distribution within our atmosphere from our manmade resources has caused a number of people to develop a variety of cancers from breast cancer to brain cancer. Miscarriages have become significant from the late 90's up until now due to many factors which still have the ecosystem as a component of those factors. Pesticides, incense, spray paints, electrical wiring, dyes, vehicle exhausts, and nitrites found in processed meats have also linked to the cause of leukemia. Viruses with ineffective cures such as SARs, Ebola virus, Nipah virus, Bird flu and Hantavirus have all pertained causation from the state of our ecosystem.

3. Profit

Studies have shown that over a twenty year life span, most green buildings have yielded $53 - $71 ($62 average) per square foot back on investment; confirming the rentability of green building investments. Further studies of the commercial real estate market have found that LEED certified buildings achieve significantly higher rents, sale prices and occupancy rates as well as lower capitalization rates, potentially reflecting lower investment risk.

Benefits for Builders:
- Reduced callbacks and warranty claims
- Lower material and labor costs during construction
- Reduced purchase cost of mechanical equipment
- Less construction waste
- Higher quality homes and competitive advantage

Benefits for Homeowners:
- Lower utility bills
- Greater comfort
- Better indoor air quality
- Energy-efficient mortgages
- Higher resale value

Benefits for the Nation:
- Less reliance on fossil fuels
- Reduced harmful emissions
- More affordable homes for first-time homebuyers
- Lower medical costs thanks to healthier, safer living conditions.
- Job creation in the energy-efficient building materials and equipment industry.

4. Certification

People are accredited, and structures are certified by LEED. Depending on the type of project, different accredited professionals may be more specialized in acquiring points effectively. Accreditations include Building design and construction (BD&C,) Interior design and construction (ID&C,) Operations and Maintenance (O&M,) Home (H,) and neighborhood Development (ND.)

Even though points are what lead to certification, they're not earned during the project build process. By taking certain actions, a project will earn credits. These credits are valued at either specific point values or at ranges of points. To earn credits, is to earn points. There are nine categories in which credits may be earned, and respective points available in each category:

1. Integrative Process. (IP) - 1
2. Location and Transportation. (L+T) - 16
3. Sustainable Sites. (SS) - 10
4. Water Efficiency. (WE) - 11
5. Energy and Atmosphere. (E+A) - 33
6. Materials and Resources. (M+R) - 13
7. Indoor Environmental Quality. (IEQ) - 16
8. Innovation in Design. (ID) - 6
9. Regional Priority. (RP) – 4

There are a total of 110 available points, and four available certifications:

1. Certified (Capital "C")
2. Silver
3. Gold
4. Platinum